Trend Study 2-27-01

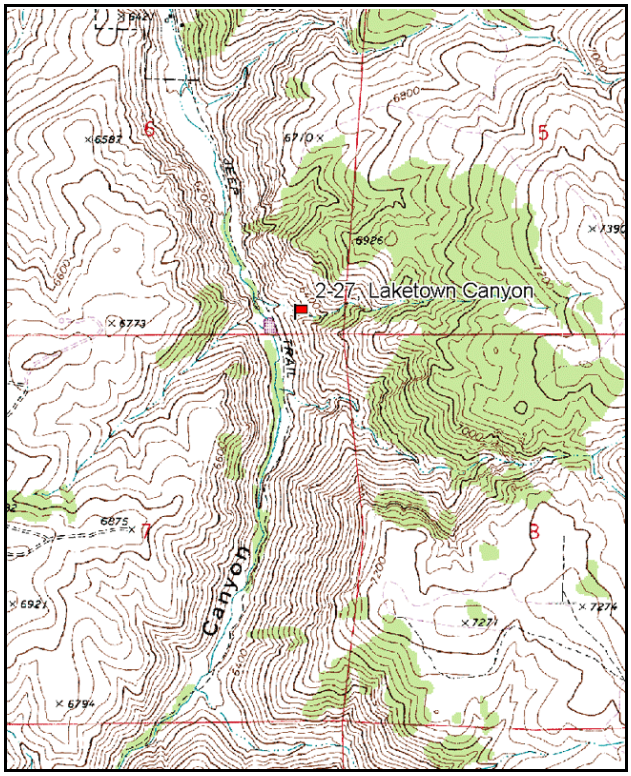
Study site name: Laketown Canyon. Vegetation type: Mountain Mahogany.

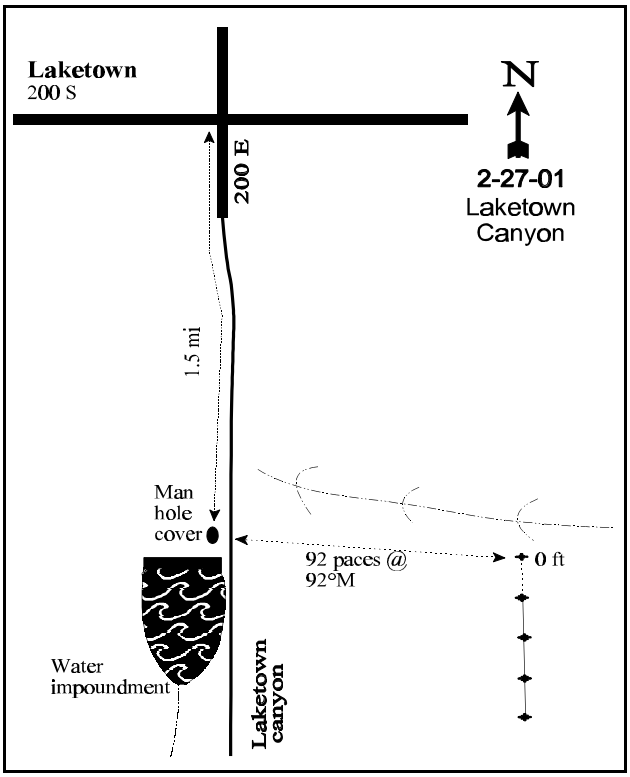
Compass bearing: frequency baseline 162 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). No rebar marking belt placement.

LOCATION DESCRIPTION

From 200 East 200 South in Laketown, proceed south into Laketown Canyon 1.5 miles stopping at a stockpond dam. Walk to the manhole cover on the northeast corner of the dam. Take an azimuth of 92 degrees magnetic and walk 92 paces up the ridge to the 0-foot baseline stake. The 0-foot stake is marked with browse tag #7937.





Map Name: Laketown

Diagrammatic Sketch

Township 12N, Range 6E, Section 7

UTM 4627657 N, 474653 E

DISCUSSION

Trend Study No. 2-27

The Laketown Canyon study samples a mountain mahogany winter range located on a steep (55%), west-facing slope. The range type is mixed mountain brush. At 6,300 feet elevation, the study site is within critical deer winter range limits. Although elk are known to inhabit this general area, there is little elk sign on this particular site. In contrast, deer and domestic sheep pellet groups, tracks, and other signs were very common and the more preferred browse species heavily hedged in 1984. Deer pellet groups were not very abundant in 1996 with a quadrat frequency of only 9%. A pellet group transect read on the site in 2001 estimated 42 deer days use/acre (103 ddu/ha). About 90% of the deer pellet groups encountered appear to be from winter use with approximately 10% from late winter/early spring. A few moose pellet groups were seen near the site but not encountered within the pellet group transect. Cattle sign occurs at the bottom of the slope around a nearby stock pond, but not on the steep slopes of the site itself.

Soil is within a mapping unit known as the "Lundy Dry-Rock Outcrop Complex". Soils in this unit are all very gravelly loams that are excessively drained and moderately permeable to water. Formed residually or colluvially from limestone, these soils normally possess only a 16 inch profile before fractured limestone bedrock is encountered. Strongly calcareous and moderately alkaline, the Lundy soil usually drys completely in mid-summer. Erosion is moderate to high (Campbell and Lacey 1982). Soil at the site has a loam texture with a slightly alkaline (pH of 7.6) soil reaction. Effective rooting depth (see methods) is estimated at just under 12 inches. Some bare ground is exposed on the site mainly along trails which follow the contour. Soil movement is evident and consists primarily of pedestalled soil on the uphill side of shrubs. There are no active gullies. The erosion condition class was determined to be slight in 2001.

Browse composition includes several co-dominant shrubs of which the most important are black sagebrush, true mountain mahogany, and mountain big sagebrush. Black sagebrush is the most abundant preferred species with a density of 1,160 plants/acre in 2001. Utilization is mostly light and percent decadence is low at 19%. Mountain big sagebrush occurs in scattered clumps where the soil is significantly deeper. These shrubs were moderately hedged with 80% showing poor vigor in 1996. Percent decadency was high in 1984, 1990 and 1996, ranging from 70% to 100%. No reproduction was noted in past readings and dead plants outnumbered live ones by a ratio of 3 to 1 in 2001. True mountain mahogany numbered only 240 plants/acre in 2001. The average mature shrub measured just over 4 feet in height, but some plants on the site are tall enough to be partly unavailable. Utilization was extremely heavy in 1984, when 92% of the mahogany was heavily hedged (>60% of twigs browsed). Use since then has been mostly moderate.

Less desirable shrubs found on the site include green rubber rabbitbrush, stickyleaf low rabbitbrush, broom snakeweed, gray horsebrush, snowberry, and Utah juniper. Point-center quarter data from 1996 estimated 40 juniper trees/acre with an average diameter of 6 inches. Broom snakeweed is the most abundant shrub with a density of 3,180 plants/acre in 2001.

Herbaceous understory plants are limited to a moderately dense stand of cheatgrass intermixed with Sandberg bluegrass, bluebunch wheatgrass, and Indian ricegrass. Cheatgrass accounted for 34% of the grass cover in 1996 and 25% in 2001. Forbs occur infrequently and combine to produce about 2% total cover.

1984 APPARENT TREND ASSESSMENT

Soil trend appears to be declining because of moderately high erosion resulting from a lack of perennial herbaceous cover. An improvement in this cover category would do much to stabilize this soil. The vegetative trend also appears to be declining due to the extremely heavy use, poor vigor, and high percent decadence of black sagebrush and mountain big sagebrush.

1990 TREND ASSESSMENT

The key browse species, black sagebrush and mountain big sagebrush, display downward trends in lack of reproduction and severely hedged growth forms. However, on the plants sampled in the transect and classified, recent hedging has been more moderate and growth and vigor normal on most plants. The number of true mountain mahogany remains low. The mahogany population declined 31%, while 44% of the population was classified as decadent. Broom snakeweed remains the most common species, although it did decrease by 58%. Trend for the herbaceous understory is up slightly due to an increase in the sum of nested frequency for perennial grasses. Sandberg bluegrass increased significantly in nested frequency as it forms a dense understory. However, the cover value for bare soil increased to 13% with signs of slight soil movement.

TREND ASSESSMENT
soil - slightly downward (2)
browse - down (1)
herbaceous understory - up slightly (4)

1996 TREND ASSESSMENT

The soil trend is up due to a decline in bare ground from 13% to 7% and an increase in litter cover from 25% to 31%. Some soil movement is inevitable due to the steep slope, although current erosion is minimal. Trend for browse is stable for true mountain mahogany and black sagebrush, but declining for mountain big sagebrush. This site is obviously harsh for many shrubs. Mountain big sagebrush has no reproduction and only moderate use, yet shows poor vigor and high decadency. Without some recruitment, mountain big sagebrush will eventually die out. However, it is only a minor component in the browse composition as it only makes up 2% of the browse cover. Black sagebrush is lightly utilized with similar vigor as noted in 1990, yet percent decadence has declined from 94% to 34%. The density change between 1990 and 1996 may be partly due to the much larger sample used in 1996 which effectively tripled the sample size. There are high numbers of dead plants for both sagebrush species. Overall browse trend is considered stable. Trend for the herbaceous understory is up with an increase in the sum of nested frequency for both perennial grasses and forbs. Sum of nested frequency for bluebunch wheatgrass doubled since 1990. Forbs are still limited even with sum of nested frequency for perennial species increasing by 70%.

TREND ASSESSMENT
soil - up (5)
browse - stable for black sagebrush and mahogany (3)
herbaceous understory - up (5)

2001 TREND ASSESSMENT

Trend for soil is slightly down due to an increase in percent bare ground from 7% to 14%. Percent cover of vegetation and litter also declined slightly. There is some erosion occurring due to the steep slope, but it does not appear to be excessive and the erosion condition class was determined to be slight. Trend for the key browse species, black sagebrush and true mountain mahogany, appear to be stable. Density of both species has remained similar to 1996 estimates. Utilization is somewhat heavier on black sagebrush but lighter on mahogany. Average vigor has improved on black sagebrush while percent decadence has declined from 34% to 19%. Vigor of true mountain mahogany remains normal and there are no decadent plants. Annual leader growth averaged only 2.2 inches in 2001. Mountain big sagebrush offers some additional preferred winter forage, however, it occurs in relatively low densities (100 plants/acre). Density has declined 50% since 1996. The drop in density comes entirely from the decadent age class. The remaining population is lightly browsed,

shows improved vigor, while percent decadence has declined from 70% in 1996 to 20% in 2001. This is obviously a marginal site for mountain big sagebrush, especially during a drought year. Trend for the herbaceous understory is down slightly due to a decline in the sum of nested frequency for perennial grasses and forbs. The most abundant grass, Sandberg bluegrass, has declined significantly in nested frequency. The two other common perennial species, bluebunch wheatgrass and Indian ricegrass, increased slightly, although not significantly. Cheatgrass declined significantly and declined in percent cover from 9% to 5%. Perennial forbs are still lacking.

TREND ASSESSMENT
soil - slightly down (2)
browse - stable (3)
herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Herd unit 02 , Study no: 27

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Agropyron spicatum	a30	a37	b80	b111	15	15	35	41	6.01	7.86
G	Bromus brizaeformis (a)	-	-	a9	b32	-	-	3	10	.04	.67
G	Bromus japonicus (a)	-	-	3	4	-	-	1	1	.00	.00
G	Bromus tectorum (a)	-	-	b315	a163	-	-	95	65	8.50	5.09
G	Carex spp.	-	-	-	4	-	-	-	1	-	.03
G	Koeleria cristata	-	-	2	4	-	-	2	2	.06	.03
G	Oryzopsis hymenoides	37	40	40	56	20	17	20	21	2.66	3.91
G	Poa secunda	a136	c270	c276	b182	55	92	89	71	6.79	1.93
G	Stipa comata	a13	a3	ab21	b30	5	3	9	13	.85	1.02
Total for Annual Grasses		0	0	327	199	0	0	99	76	8.54	5.77
Total for Perennial Grasses		216	350	419	387	95	127	155	149	16.38	14.81
Total for Grasses		216	350	746	586	95	127	254	225	24.93	20.58
F	Alyssum alyssoides (a)	-	-	a28	b49	-	-	11	22	.10	.11
F	Arabis spp.	4	-	4	6	2	-	2	2	.01	.01
F	Astragalus convallarius	-	-	3	-	-	-	2	-	.01	-
F	Camelina microcarpa (a)	-	-	1	4	-	-	1	3	.00	.07
F	Calochortus nuttallii	-	-	-	1	-	-	-	1	-	.00
F	Chaenactis douglasii	3	3	4	-	1	2	3	-	.01	-
F	Cirsium undulatum	c19	bc5	ab4	a-	8	4	2	-	.06	-
F	Crepis acuminata	-	-	-	6	-	-	-	2	-	.06
F	Cryptantha spp.	a4	ab15	c44	bc49	2	8	24	17	.93	1.55
F	Descurainia pinnata (a)	-	-	a-	b8	-	-	-	5	-	.02
F	Draba spp. (a)	-	-	-	3	-	-	-	1	-	.01
F	Epilobium brachycarpum (a)	-	-	8	-	-	-	4	-	.02	-

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
F	Eriogonum umbellatum	-	-	-	2	-	-	-	1	-	.00
F	Hackelia patens	$_{a}$-	$_{b}$17	$_{b}$12	$_{b}$10	-	7	7	5	.14	.02
F	Lappula occidentalis (a)	-	-	-	9	-	-	-	3	-	.04
F	Machaeranthera grindelioides	-	-	3	3	-	-	1	1	.03	.03
F	Microsteris gracilis (a)	-	-	-	1	-	-	-	1	-	.00
F	Penstemon humilis	$_{a}$-	$_{a}$-	$_{b}$15	$_{ab}$8	-	-	6	3	.27	.01
F	Phlox hoodii	-	-	4	7	-	-	3	3	.04	.06
F	Senecio multilobatus	$_{b}$12	$_{a}$-	$_{b}$28	$_{a}$-	8	-	13	-	.18	-
F	Tragopogon dubius	$_{b}$14	$_{a}$-	$_{a}$1	$_{a}$-	6	-	1	-	.00	-
F	Verbascum thapsus	$_{ab}$8	$_{a}$-	$_{b}$10	$_{a}$1	4	-	5	1	.10	.03
Total for Annual Forbs		0	0	37	74	0	0	16	35	0.12	0.26
Total for Perennial Forbs		64	40	132	93	31	21	69	36	1.81	1.80
Total for Forbs		64	40	169	167	31	21	85	71	1.94	2.06

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 02 , Study no: 27

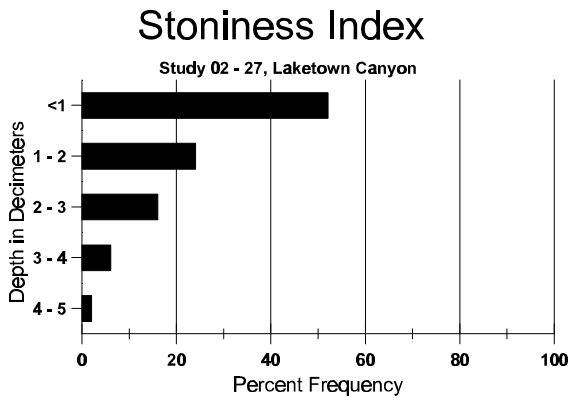
Type	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Artemisia nova	30	28	3.37	2.23
B	Artemisia tridentata vaseyana	9	5	.18	-
B	Cercocarpus montanus	8	8	1.20	1.36
B	Chrysothamnus nauseosus consimilis	19	14	3.09	3.56
B	Chrysothamnus viscidiflorus viscidiflorus	12	12	.72	.49
B	Eriogonum microthecum	0	1	.00	-
B	Gutierrezia sarothrae	57	53	1.58	2.03
B	Juniperus osteosperma	0	0	.00	-
B	Juniperus scopulorum	1	1	-	-
B	Symphoricarpos oreophilus	2	2	-	.06
B	Tetradymia canescens	10	8	.39	.48
Total for Browse		148	132	10.56	10.23

BASIC COVER --
Herd unit 02 , Study no: 27

Cover Type	Nested Frequency		Average Cover %			
	'96	'01	'84	'90	'96	'01
Vegetation	364	330	2.75	9.50	37.45	34.99
Rock	309	258	33.25	30.75	26.56	24.75
Pavement	229	283	7.00	11.25	6.03	8.76
Litter	384	355	38.00	25.25	30.82	32.23
Cryptogams	164	92	13.75	10.75	2.84	2.50
Bare Ground	200	218	5.25	12.50	7.39	14.36

SOIL ANALYSIS DATA --
Herd Unit 02, Study no: 27, Laketown Canyon

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.8	58.0 (11.9)	7.6	39.2	37.4	23.4	2.4	5.6	153.6	.8



PELLET GROUP FREQUENCY --
Herd unit 02 , Study no: 27

Type	Quadrat Frequency	
	'96	'01
Rabbit	6	-
Elk	1	-
Deer	9	5

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
01	01
17	N/A
-	-
539	42 (103)

BROWSE CHARACTERISTICS --
Herd unit 02 , Study no: 27

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
S	84	7	-	-	-	-	-	-	-	-	7	-	-	-	233			7
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	84	-	2	1	-	-	-	-	-	-	3	-	-	-	100			3
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	84	-	-	10	-	-	-	-	-	-	10	-	-	-	333	7	8	10
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	10	16	1
	96	44	1	-	1	-	-	-	-	-	45	-	1	-	920	15	28	46
	01	37	7	-	-	-	-	-	-	-	44	-	-	-	880	11	19	44
D	84	-	-	26	-	-	-	-	-	-	26	-	-	-	866			26
	90	9	8	-	-	-	-	-	-	-	14	-	-	3	566			17
	96	24	1	-	-	-	-	-	-	-	14	-	1	10	500			25
	01	7	2	1	1	-	-	-	-	-	8	-	-	3	220			11
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	360			18
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	320			16

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	05%	95%	00%	-54%
'90	44%	00%	17%	+59%
'96	03%	00%	16%	-21%
'01	16%	02%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	1299	Dec:		67%
'90	599			94%
'96	1460			34%
'01	1160			19%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	-	-	1	-	-	-	-	-	-	-	-	1	-	33	16	18	1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	2	-	1	-	-	-	-	-	-	2	-	1	-	60	18	31	3
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60	31	37	3
D	84	-	2	6	-	-	-	-	-	-	6	-	-	2	266			8
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	1	5	1	-	-	-	-	-	-	-	-	6	1	140			7
	01	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	480			24
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	300			15

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	22%	78%	33%	-89%
'90	00%	00%	00%	+84%
'96	50%	20%	80%	-50%
'01	00%	00%	20%	

Total Plants/Acre (excluding Dead & Seedlings)					
	'84	299	Dec:		89%
	'90	33			100%
	'96	200			70%
	'01	100			20%

Cercocarpus ledifolius																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	40	43	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	0	Dec:	-
	'90	0		-
	'96	0		-
	'01	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
S	84	9	1	-	-	-	-	-	-	-	10	-	-	-	333			10
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	-	1	2	-	-	-	-	-	-	3	-	-	-	100			3
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	2	-	-	-	-	2	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	-	-	10	-	-	-	-	-	-	10	-	-	-	333	48	59	10
	90	2	3	-	-	-	-	-	-	-	5	-	-	-	166	40	45	5
	96	-	4	2	-	2	-	-	-	-	6	2	-	-	160	38	56	8
	01	4	8	-	-	-	-	-	-	-	12	-	-	-	240	51	72	12
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	2	-	-	-	-	-	-	-	2	-	-	-	133			2
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	08%	92%	00%	-31%
'90	71%	00%	00%	-33%
'96	80%	20%	00%	+17%
'01	67%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	433	Dec:		0%
'90	299			44%
'96	200			0%
'01	240			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus consimilis																		
Y	84	-	2	-	-	-	-	-	-	-	2	-	-	-	66			2
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	5	-	-	-	-	-	-	-	-	4	1	-	-	333	32	26	5
	96	25	-	-	-	-	-	-	-	-	22	-	3	-	500	26	41	25
	01	13	-	-	-	-	-	-	-	-	13	-	-	-	260	30	48	13
D	84	3	5	-	-	-	-	-	-	-	8	-	-	-	266			8
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	96	5	-	-	-	-	-	-	-	-	1	-	4	-	100			5
	01	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	70%	00%	00%	+17%
'90	00%	00%	00%	+36%
'96	00%	00%	23%	-32%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	332	Dec:	80%
	'90	399		17%
	'96	620		16%
	'01	420		38%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
Y	84	6	-	-	-	-	-	-	-	-	6	-	-	-	200			6
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	9	-	-	-	-	-	-	-	-	9	-	-	-	300	13	27	9
	90	6	-	-	-	-	-	-	-	-	6	-	-	-	200	10	14	6
	96	14	-	-	2	-	-	-	-	-	13	-	3	-	320	14	22	16
	01	10	-	-	-	-	-	-	-	-	10	-	-	-	200	15	20	10
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	01	6	1	-	-	-	-	-	-	-	7	-	-	-	140			7
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	-60%
'90	00%	00%	00%	+50%
'96	00%	00%	15%	-15%
'01	06%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	500	Dec:	0%
	'90	200		0%
	'96	400		15%
	'01	340		41%

Eriogonum microthecum																		
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	0	Dec:	0%
	'90	0		0%
	'96	0		0%
	'01	20		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	11	-	-	-	-	-	-	-	-	11	-	-	-	733			11
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	63	-	-	-	-	-	-	-	-	63	-	-	-	2100			63
	90	35	-	-	-	-	-	-	-	-	35	-	-	-	1166			35
	96	34	-	-	-	-	-	-	-	-	34	-	-	-	680			34
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	80	-	-	-	-	-	-	-	-	80	-	-	-	2666	8	9	80
	90	15	-	-	-	-	-	-	-	-	15	-	-	-	500	13	12	15
	96	137	-	-	-	-	-	-	-	-	137	-	-	-	2740	10	11	137
	01	157	-	-	-	-	-	-	-	-	152	5	-	-	3140	8	12	157
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	5	-	-	-	-	-	-	-	-	3	-	-	2	333			5
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	-58%
'90	00%	00%	04%	+42%
'96	00%	00%	00%	- 7%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	4766	Dec:	0%
	'90	1999		17%
	'96	3420		0%
	'01	3180		1%

Juniperus scopulorum																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	+ 0%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	0	Dec:	-
	'90	0		-
	'96	20		-
	'01	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Leptodactylon pungens																		
M	84	2	-	-	-	-	-	-	-	-	2	-	-	-	66	4	4	2
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	66	Dec:		-
'90	0			-
'96	0			-
'01	0			-

Symphoricarpos oreophilus																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	2	-	-	-	-	-	-	-	-	-	-	2	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	2	-	-	-	-	-	-	-	-	-	2	-	40	17	28	2
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	11	13	1
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	50%	00%	100%	-50%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'84	0	Dec:	0%
'90	0		0%
'96	80		0%
'01	40		50%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	1	-	-	-	-	-	-	-	-	1	-	-	-	33	9	10	1
	90	3	-	-	-	-	-	-	-	-	3	-	-	-	100	7	7	3
	96	11	-	-	-	-	-	-	-	-	6	-	5	-	220	11	20	11
	01	5	-	-	-	-	-	-	-	-	5	-	-	-	100	10	17	5
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	2	-	-	-	-	-	-	-	-	-	-	2	-	40			2
	01	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	+34%
'90	00%	00%	00%	+64%
'96	00%	00%	50%	+ 7%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	66	Dec:	0%
	'90	100		0%
	'96	280		14%
	'01	300		67%